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Special Industry Analysis
No. 15

FATS, OILS, AND OIL-BEARING MATERIALS

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A-15

NOTE

The present report is one of a number which were prepared during 1944 and 1945 for the Foreign Economic Administration by members of the staff of the United States Tariff Commission. Owing to the desire of the Foreign Economic Administration to obtain this material as promptly as possible, the reports were not reviewed by the Tariff Commission. All statements of fact or opinion in these reports are attributable to the individual staff members who prepared them. The reports were originally intended for confidential use of Government agencies, but are now being made public with the consent of the Foreign Economic Administration.

A-15

FOREWORD

This is one of a series of Special Industry Analyses discussing from a commodity or individual industry point of view the outstanding items entering into the trade of Japan proper with its Empire and with foreign countries. These analyses are a part of a larger project which includes compilations (annotated) of the imports and exports of Japan proper by sources and destinations; surveys of certain of the colonial areas, emphasizing their Empire and foreign trade and post-war problems relating thereto; an over-all study of the trade of Japan proper; and a survey of Japan's shipbuilding industry and shipping services and requirements in the pre-war period. In all of the studies Manchuria has been included as an Empire area owing to the political, economic, and military dominance of Japan in that area, especially during the last decade.

Most of the data in these analyses were taken from official and semiofficial Japanese sources. Not only have errors and inconsistencies frequently been detected within individual volumes, but many data from different sources supposedly reporting on the same subject are irreconcilable.

A-15

TABLE OF CONTENTS

Text

	Page
Introduction and summary	1
Descriptions and uses	3
Summary of production, imports, exports, and apparent consumption	4
Organization and operation	7
Production	8
Imports	9
Exports	13
Consumption	15
Post-war problems	15

Tables

1.- Fats and oils: Summary of production, imports, exports, and apparent consumption, Japan proper and Karafuto, 1929-36	5
2.- Fats and oils: Summary of production from domestic materials; imports of fats and oils, and oil-bearing materials in terms of oil; exports; and apparent consumption of Japan proper and Karafuto, 1929-36	6
3.- Oil-bearing materials: Summary of production, imports, exports, and apparent consumption, Japan proper and Karafuto, 1929-36	7
4.- Fats and oils: Production in Japan, by principal kinds, averages, 1929-32 and 1933-36, annual, 1937 and 1938	10
5.- Fats and oils: Imports into Japan, by principal kinds, from Empire and other areas, 1929, 1933, and 1937-38	11
6.- Oil-bearing materials: Imports into Japan, by principal kinds, from Empire and other areas, 1929, 1933, and 1937-38	12
7.- Fats and oils: Exports from Japan, by principal kinds, to Empire and other areas, 1929, 1933, and 1937-38	14

FATS, OILS, AND OIL-BEARING MATERIALS

A-15

Introduction and summary.

Japan's pre-war trade (with both Empire and non-Empire countries) in fats, oils, and oil-bearing materials accounted by value for about 2½ percent of its total trade. In 1933-37 Japan's imports (including shipments from Empire areas) were valued at 3.4 billion yen and its exports (including shipments to Empire areas) at 3.2 billion. During the same period imports of fats, oils, and oil-bearing materials were valued at about 130 million yen (3.8 percent of total imports) and exports at about 40 million.

The total production of fats and oils from domestic materials supplied only about 60 percent of Japan's pre-war consumption. To supply the remainder, furnish the necessary variety, and in addition build up an export trade, Japan was dependent upon imports from its Empire areas and from other areas in Asia. Production of vegetable oils from imported materials far exceeded that from domestic materials.

While Japan has been on an import basis with respect to fats, oils, and oil-bearing materials, exports of oils from Japan have, nevertheless, been relatively large. They have consisted chiefly of fish oils and vegetable oils produced from imported oil-bearing materials. The crushing of imported oil-bearing materials results not only in production of oil in Japan but also of oil cake, which is used principally as a fertilizer material. The supply situation in oils and fats in 1936, the last year for which detailed information is available, was as follows:

	Million pounds
Production from domestic materials	342
Imports:	
Fats and oils, as such	151
Oil-bearing materials, in terms of oil	396
Total, production plus imports	889
Exports	361
Apparent consumption	528

As Japan has been the leading world producer of fishery products, it has depended chiefly upon fish as a source of its domestic oil supplies. Before the war, the country also produced large quantities of whale oil in the Antarctic, but virtually all of that oil was shipped from the producing areas direct to Europe and little or none entered into consumption in Japan itself. Only a small part of Japan's requirements is supplied from domestically produced oilseeds. Rapeseed is the principal seed grown locally for its oil. Relatively small quantities of oil are also obtained from domestically grown sesame, flaxseed, and other seeds. Soybeans and peanuts grown in Japan are consumed for food without being crushed to obtain oil. Small quantities of animal fats--butter, lard, tallow, and greases--are produced from Japan's small livestock output.

A-15

Fats and oils are used in Japan for food and in the production of soap, cosmetics, pharmaceuticals, candles, protective coatings, and a number of other industrial products. Probably more than half of the total consumed was in food and from one-fourth to one-third in soap and candles. Most of the fats and oils were undoubtedly for civilian use but some were for military uses as well. Castor and rapeseed oils in particular were used for military purposes, probably as lubricants, and the byproduct glycerin was used as an ingredient of munitions and industrial explosives.

Per capita consumption of fats and oils in Japan is very low compared with the per capita consumption in western countries. For example, the annual average per capita consumption in 1933-36 was only about 6 pounds 1/ compared with nearly 70 pounds in the United States and about 20 pounds in the Soviet Union.

Based upon an estimated population in Japan in 1947 of 77 million, and a per capita consumption of 6 pounds of fats and oils, the total quantity needed to supply Japan's annual requirements would be about 460 million pounds. Production from domestic materials during 1933-36 was estimated at about 260 million pounds annually. This consisted chiefly of fish oils, with rapeseed oil making up most of the remainder. Japan's production of fish oil may not be appreciably curtailed in the post-war period. 2/ Any slight curtailment which might occur could probably be balanced by an increase in domestic production of oilseeds. Although the possibilities of an increase in domestic production of oilseeds has decided limitations, because of the small available acreage suitable for growing oilseeds, still there are possibilities of a moderate increase because of a decline in the acreage planted to mulberry trees or because of shifts in other crops. Assuming that production from domestic materials will be about the same in the post-war period as in 1933-36, then it would be necessary to import about 200 million pounds of oils, either in the form of oil or oilseeds, in order to supply about the same per capita volume as in the pre-war period. This would be about 220 million pounds less than were imported in 1933-36. This assumes that virtually no fats or oils or oil-bearing seeds would be exported. Should Japan be allowed to export some fats or oils or increase its consumption, then imports would have to be increased accordingly.

1/ This is based upon figures which although official, admit of some doubt as to their accuracy. Different sets of official Japanese figures rarely agree. However, they are probably reasonably correct, though actual consumption may have been slightly higher than the figures indicate. As the trend was upward, consumption was probably higher during 1936-39 than before that period.

2/ The bulk of the marine animal oils are obtained from types of fish--such as the sardine--which are caught mainly in waters off Japan proper.

A-15

If imports of oilseeds into Japan were decreased, production of oil cake in Japan would also decrease. This aspect of the situation has a bearing upon Japan's fertilizer requirements and would need consideration from that important standpoint.

A decline in exports of oilseeds to Japan from areas such as Manchuria and Korea might necessitate increased exports of oilseeds, or oil and oil cake, from those areas to other countries. It would probably be necessary in that event to enlarge the crushing facilities in those areas.

Before the war, as previously mentioned, Japan was an important factor in whaling in the Antarctic. This oil was not consumed in Japan. Cessation of Japanese whaling operations in that area would consequently have no effect on oil supplies for Japanese consumption.

Fats and oils, their derivatives and byproducts are used for both civilian and military purposes and are to a large extent interchangeable with one another. Since they may be used for either, it is not possible to limit or control supplies for purely civilian use, although, as implied above, the quantity of oils and fats and oil-bearing materials imported into Japan could be readily controlled, thereby influencing oil and fat and fertilizer supplies.

Description and uses.

Fats and oils are used for a wide variety of purposes in Japan just as they are in other countries. Major uses are inedible products and soap. Probably more than one-half of the total consumption is for food and more than one-quarter for the production of soap. The edible products are chiefly cooking oils, margarine, and various confections. Fats and oils are also used in the production of paint, varnish, lacquer, water-proof tissue, coated fabrics, polishes, lubricants, toilet creams, medicinals, and stearic acid for use in candles. Glycerin, a byproduct of soap and fatty acids, is used in explosives, plastics, medicinals, and in other products.

Fats and oils are therefore essential to a degree for both civilian and military use. Fats and soap both contribute, of course, to the health and well-being of a people in peace and war. Glycerin is used directly for military purposes in munitions, road building, demolition, mining, etc., as well as for similar purposes (except for munitions) in peacetime. Medicines, protective coatings, coated fabrics, electrical insulation, lubricants for airplanes and reciprocating marine engines, for both civilian and military uses, all require fats and oils of various kinds. Data are not available on the military requirements of castor oil in Japan but it is probable that engine lubricants are among the important uses. The demand for fats and oils increases in wartime, although by rigid restrictions on civilian uses the over-all consumption can be cut below peacetime requirements.

A-15

4

A considerable degree of interchangeability exists among the different fats and oils but some are unsuitable or less suitable than others for given purposes. Of the fish oils produced in Japan large amounts are hardened by hydrogenation and used in the manufacture of soap and stearic acid. Some are used in edible products. Substantial amounts are exported. Rapeseed oil, the principal vegetable oil produced in Japan from domestically grown seed, is suitable for both food and industrial uses (lubricants, for example). Linseed, perilla, and hempseed oils are used chiefly in paint, varnish, and related products. Soybean oil is used largely in industrial products such as protective coatings, but it is also used in food. Domestically grown soybeans and peanuts are used chiefly as articles of food but large percentages of these imported materials are crushed for oil. Castor oil is used in medicine, as a lubricant, and for other industrial purposes.

As previously noted, the crushing of domestic and imported oilseeds results in production of oil cake as well as of oil. Oil cake has been in great demand as a fertilizer material in Japan, particularly before the production of synthetic fertilizers reached major proportions. Not much of it has been used for feed, however, because of the small livestock production.

Summary of production, imports, exports, and apparent consumption.

Statistics of production, trade with Empire and other areas, and apparent consumption of fats and oils in Japan proper and Karafuto are summarized for 1929-36 in table 1. 1/ Comparable figures are not available for later years. The production figures include those for oil obtained from both domestic and imported oil-bearing materials but do not include the whale oil produced on floating ships in the Antarctic. (Production of whale oil was begun in the Antarctic in 1934 but was small before 1936.)

Production of oils from domestic and imported raw materials is not separately available. However, an estimate of each has been made on the following assumptions: Production of animal and marine-animal oils and the estimated production of oils from domestically produced rapeseed, sesame seed, and flaxseed have been considered to be the total production from domestic materials; the difference between the total production of fats and oils and that from the sources mentioned have been considered production from imported materials (see table 2).

Japan produced sufficient fats and oils from domestic materials during 1929-36 to supply about 60 percent of its requirements; production increased almost threefold from 1929 to 1936, or from 118 million to 324 million pounds. Considerably more fats and oils (including oilseeds in

1/ As previously noted, figures from different official sources are not always in agreement.

A-15

6

Table 2.- Fats and oils: Summary of production from domestic materials; imports of fats and oils, and oil-bearing materials in terms of oil; exports; and apparent consumption of Japan proper and Karafuto, 1929-36

(In thousands of pounds)

Year	Production from domestic materials 1/	Imports		Total	Exports	Apparent consumption
		Fats and oils, as such	Oil-bearing materials in terms of oil 2/			
1929	117,688	117,886	202,846	320,732	138,412	300,008
1930	140,307	103,795	200,796	304,591	205,312	239,586
1931	148,863	87,941	216,801	304,742	118,933	334,672
1932	180,042	72,350	179,759	252,109	177,462	254,689
1933	210,538	58,030	231,449	289,479	144,685	355,332
1934	250,795	70,524	275,704	346,228	183,417	413,606
1935	231,535	149,723	342,503	492,226	342,988	380,773
1936	342,115	150,530	396,363	546,893	361,436	527,572

1/ Animal fats and oils, marine animal oils, and estimated output of rapeseed oil, sesame oil, and linseed oil from domestic seed.

2/ Total production of fats and oils less production (partly estimated--see footnote 1) from domestic materials.

Source: The Statistical Abstract of the Ministry of Agriculture and Forestry Japan 1936-37; Factory Statistics of the Department of Commerce and Industry, and Official Annual and Monthly Statistics of Japan, Formosa, Korea, and Mandated Islands.

Table 3.- Oil-bearing materials:[1] Summary of production, imports, exports, and apparent consumption, Japan proper and Karafuto, 1929-36

Year	Production	Imports		Exports		Apparent consumption
		From Empire areas	Other	To Empire areas	Other	
	Quantity (1,000 pounds)					
1929	956,439	1,793,454	471,018	2,950	9,226	3,208,735
1930	1,072,503	1,490,705	392,953	2,679	6,504	2,946,978
1931	915,719	1,800,539	380,723	4,168	5,441	3,087,372
1932	925,831	1,672,738	243,406	1,841	6,422	2,833,762
1933	1,040,727	1,570,622	325,027	2,997	6,239	2,927,140
1934	897,053	1,850,221	362,678	1,890	9,300	3,098,762
1935	954,174	1,778,713	470,834	2,340	8,332	3,193,049
1936	1,063,351	1,981,998	378,481	3,893	3,679	3,416,258
	Value (1,000 dollars)					
1929	26,240	42,465	12,048	176	378	80,199
1930	20,529	30,535	8,309	127	228	59,018
1931	15,870	22,815	6,429	114	133	44,867
1932	14,835	16,434	4,041	58	118	32,134
1933	12,581	17,682	3,913	91	130	33,955
1934	13,241	21,351	4,781	67	202	39,104
1935	15,177	26,845	7,372	52	204	49,133
1936	19,546	32,465	6,490	75	104	58,322

1/ Includes materials such as soybeans and peanuts which are only partly used for the production of oil.

Source: The Statistical Abstract of the Ministry of Agriculture and Forestry, Japan, 1936-37, and Official Annual and Monthly Statistics of Japan, Formosa, Korea, and Mandated Islands.

Organization and operation.

Japan is a large producer of marine-animal oils. Sardine oil is produced in greatest quantity, but oil is also obtained from herring, cod, shark, and other species of fish. The bulk of the output is produced from whole fish in reduction plants. Most of the fish are caught in small boats in Japanese waters. The reduction plants are equipped with modern machinery and turn out fish scrap and meal as joint products for use [illegible] been established in various sections of Japan and the manufacture of fish oil, scrap, and meal has become one of the important marine-product industries. Some fish oil is probably also obtained from discarded parts of fish which have been prepared for food.

A-15

Table 2.- Fats and oils: Domestic production from domestic materials; imports of fats and oils and oil-bearing

Japan has engaged in whaling operations for many years. Its entry into the whaling industry in the Antarctic, however, dates only since 1934. Japanese whaling activities in the Antarctic increased until in 1938-39 it had 6 factory ships and 48 killer boats in operation in that area. Three of the ships were owned and operated by the largest fishing company in Japan, which was engaged in all branches of coastal and deep-sea fishing production. Two ships were owned by another company and the other ship by a third company, both founded for the sole purpose of whaling. Most of the oil produced in the Antarctic has been sold to European countries.

There are about a dozen producers of hardened oils (largely fish oils), most of which also produce soap. Soap is the principal domestic outlet for the hardened fish oils but they are also used for food. Tokyo and Osaka are the principal centers of soap production.

Japan obtains some animal fats as byproducts of the livestock slaughtering industry but production is relatively small.

There is a sizable oilseed crushing industry in Japan. About 100 oilseed-crushing plants, of which only 6 or 7 were large, were said to be operating in Japan before the war. The manufacturing process is simple--the oil is expressed from the ground seed and oil cake is obtained as an important joint product.

Production.

Production [1] of fats and oils in Japan from domestic and imported materials increased from 347 million pounds in 1929-32 to 570 million in 1933-36, an increase of 64 percent (see table 4). It is probable that the production in each of the years 1937 and 1938 was about twice as large as in 1929-32.

The increase in production occurred in nearly all kinds of fats and oils. Production of animal fats more than doubled from 9.7 million pounds in 1929-32 to 21.4 million pounds in 1938. Production of marine-animal oils increased 85 percent from 98.3 million pounds in 1929-32 to 182.9 million pounds in 1933-36, and the output was probably still higher in 1937 and 1938. Among the marine-animal oils sardine oil was produced in greatest quantity, accounting for about 80 percent of the total in 1933-36. Production of vegetable oils (from both domestic and imported oil-bearing materials) increased 90 percent from 238.8 million pounds in 1929-32 to 454 million pounds in 1938. Soybean oil was produced in greatest quantity (32 percent of the total in 1938) but there was a substantial output of rapeseed, coconut, perilla, cottonseed, peanut, sesame, and linseed oils.

Rapeseed oil is the only vegetable oil produced extensively from home-grown seeds. Some sesame oil and linseed oil and probably others in smaller quantities are also produced from domestic seeds.

1/ Produced in factories employing five or more persons. Output of factories employing less than five persons is believed to be small.

A-15

Table 4.- Fats and oils: Production in Japan, by principal kinds, averages, 1929-32 and 1933-36, annual, 1937 and 1938

(In thousands of pounds)

Commodity	1929-32	1933-36	1937	1938
Fats and oils:				
Animal:				
Chrysolic oil	1,099	1,371	1,809	7,029
Beef fats	5,857	7,356	8,759	5,542
Pork fats	753	1,774	2,299	2,816
Other animal fats	1,995	4,268	2,501	6,372
Total	9,704	14,769	15,368	21,358
Marine-animal oils:				
Sardine oil	66,419	141,663	1/	1/
Whale oil 2/	7,287	13,076	1/	1/
Shark oil	7,764	10,473	1/	1/
Herring oil	9,144	5,760	1/	1/
Cod oil	2,100	4,902	1/	1/
Other marine-animal oils	5,572	5,070	1/	1/
Total	98,286	180,944	1/	1/
Vegetable oils: 3/				
Soybean oil	87,059	104,597	144,303	144,866
Rapeseed oil	52,874	76,245	63,697	52,194
Coconut oil	19,449	35,667	35,521	50,273
Perilla oil	11,703	37,211	51,159	29,347
Cottonseed oil	13,735	32,955	51,045	23,093
Peanut oil	1,698	2,392	16,851	21,765
Sesame oil	13,620	13,957	14,668	11,798
Linseed oil	7,898	19,247	9,378	7,382
Hempseed oil	4,373	3,358	725	1,680
Paulownia oil	252	315	168	594
Teaseed oil	68	135	1,659	51
Other vegetable oils	26,054	48,458	113,274	111,902
Total	238,783	374,537	502,448	454,945
Grand total	346,773	570,250		

1/ Not available.
2/ Exclusive of whale oil produced in the Antarctic.
3/ Produced from domestic and imported oil-bearing materials.

Source: Section of Statistics, Ministry of Agriculture and Forestry, Japan, January 1938; The Statistical Abstract of the Ministry of Agriculture and Forestry, Japan, 1936-37; Factory Statistics, Department of Commerce and Industry, Japan, 1938.

A-15

Table 6.- Oil-bearing materials: Imports into Japan, by principal kinds, from Empire and other areas, 1929, 1933, and 1937-38

(In thousands of pounds)

Kind	Empire area				Other areas				Total
	Manchuria	Kwantung	Formosa	Korea	China	Southeast Asia 1/	British India	Other	
1929:									
Soybeans	122,471	1,129,079	1,725	420,029	145	2/	-	-	1,673,449
Cotton seed	3/	22,164	4/	3,791	190,191	659	-	2,685	219,490
Rapeseed and mustard seed	-	-	4/	4/	164,782	3	80	268	165,133
Perilla seed	3/	18,695	4/	2,372	119	-	-	-	21,186
Sesame seed	2,492	14,566	4/	4/	26,852	51	-	-	43,961
Flaxseed	-	-	4/	4/	-	-	35,074	2/	35,074
Hempseed	3/	26,443	4/	4/	13,076	-	-	75	39,594
Castor seed	3/	20,852	4/	4/	987	5,056	-	-	26,895
Peanuts	3/	8,759	95	4/	24,358	5	-	8	33,225
Copra	-	-	4/	4/	1	6,128	224	-	6,353
Other oil yielding seeds	-	-	4/	5/	90	1	-	22	113
Total	124,963	1,240,558	1,820	426,192	420,601	11,903	35,378	3,058	6/2,264,473
1933:									
Soybeans	957,657	345	1,573	447,703	-	-	2/	-	1,407,478
Cotton seed	21,211	-	4/	2,860	126,134	4,050	-	2/	154,255
Rapeseed and mustard seed	222	-	4/	4/	46,418	-	-	2	46,642
Perilla seed	59,554	548	4/	1,274	-	-	-	-	61,376
Sesame seed	28,884	304	4/	4/	16,978	700	-	-	46,866
Flaxseed	162	-	4/	4/	30,673	-	3,593	12,711	47,139
Hempseed	13,156	249	4/	4/	193	-	-	-	13,598
Castor seed	27,952	150	4/	4/	184	15,437	109	15	43,847
Peanuts	6,196	422	-	4/	19,378	266	-	-	26,262
Copra	-	-	4/	4/	-	18,273	23	176	18,472
Other oil yielding seeds	2/	-	4/	5/	-	29,481	233	2/	29,714
Total	1,114,994	2,218	1,573	451,837	239,958	68,207	3,958	12,904	6/1,895,649
1937:									
Soybeans	1,323,642	2,365	1,708	354,391	78	-	1	-	1,682,185
Cotton seed	25,728	-	4/	25,534	188,097	5,121	2	18,078	262,560
Rapeseed and mustard seed	-	-	4/	4/	15,181	2/	2/	109	15,290
Perilla seed	134,326	54	4/	487	-	-	-	-	134,867
Sesame seed	11,566	-	4/	4/	33,720	740	2/	48	46,074
Flaxseed	639	-	4/	4/	11,883	-	96	5,152	17,770
Hempseed	10,755	3/	4/	4/	-	-	-	-	10,755
Castor seed	56,017	25	4/	4/	394	13,673	21,506	1	91,616
Peanuts	11,624	2,021	7,325	4/	6,541	2	2/	-	27,513
Copra	-	-	4/	4/	-	23,640	1,980	161	25,781
Other oil yielding seeds	321	-	4/	5/	3	54,836	2/	43	55,203
Total	1,574,618	4,465	9,033	380,412	255,897	98,012	23,585	23,592	6/2,369,614
1938:									
Soybeans	1,475,869	1,220	1,130	337,316	2/	-	-	2/	1,815,535
Cottonseed	36,916	1	4/	27,124	91,690	1,183	1	11,934	168,849
Rapeseed and mustard seed	-	-	4/	4/	4,486	2/	-	-	4,486
Perilla seed	110,127	-	4/	281	2/	-	-	-	110,408
Sesame seed	15,326	90	4/	4/	12,958	76	-	2,223	30,673
Flaxseed	1,797	-	4/	4/	15,377	-	2/	482	17,656
Hempseed	17,248	-	4/	4/	-	2/	-	2/	17,248
Castor seed	38,097	249	4/	4/	-	11,584	1,567	9,834	61,331
Peanuts	85,663	9,803	5,239	4/	8,012	-	2/	2/	108,717
Copra	-	-	4/	4/	-	20,788	-	-	20,788
Other oil yielding seeds	55	-	4/	5/	710	14,134	-	2/	14,899
Total	1,781,098	11,363	6,369	364,721	133,233	47,765	1,568	24,473	6/2,370,590

1/ Includes Philippine Islands, Netherlands Indies, Straits Settlements, Thailand, French Indochina, and British Borneo.
2/ Less than 500 pounds.
3/ Not separately reported prior to 1932, included with China.
4/ Not separately classified.
5/ Reported in value only, amounting to 17 thousand yen in 1929; 94 thousand yen in 1933; 153 thousand yen in 1937; and 211 thousand yen in 1938.
6/ Excludes imports into Japan of copra from Mandated Islands, reported in value only; in 1929--1,854 thousand yen; in 1933--1,509 thousand yen; in 1937--15 thousand yen, and 1938--3,027 thousand yen.

Source: Compiled from annual and monthly statistics of Japan, Formosa, Korea, and Mandated Islands.

A-15

Exports.

Exports of fats and oils from Japan (from 1929-36) about equaled production from domestic materials, and equaled nearly 60 percent of imports of oils as such and oils produced from imported materials combined. Exports increased from 138 million pounds in 1929 to 328 million in 1937 and declined to 177 million in 1938 (see table 7).

Exports to Empire areas increased from 11 million pounds in 1929 to 33 million in 1938, representing only 8 and 18 percent, respectively, of total exports. Shipments to Empire areas were principally to Formosa, Kwantung, and Korea.

The United States, various European countries, British India, China, the Philippines, Egypt, and Mexico took most of the exports, Europe as a whole taking the largest share, and the United States the second largest (see table 7).

Exports consisted chiefly of fish oils, hardened oils (probably hardened fish oils), rapeseed oil, perilla oil, soybean oil, and cottonseed oil. The United States has generally been the principal market for the exported perilla, rape, and cottonseed oils, and Europe the principal market for fish oils, hardened oils, and soybean oil.

Although exports of oils obtained from imported seeds were substantial, exports of oils produced from domestic materials predominated, if it is assumed that the relatively large exports of fish oils and hardened fish oils were of domestic origin. 1/

Whether Japan could export as much or more oil after the war than before would depend largely upon its ability to import fish oils from Korea and oil or oilseeds from Manchuria, Korea, and other far eastern areas.

1/ This would not be the case if exports of fish oils and hardened fish oils were chiefly fish oils imported from Korea.

A-15

Table 7.- Fats and oils: Exports from Japan, by principal kinds, to Empire and other areas, 1929, 1933, and 1937-38

(In thousands of pounds)

Kind	Empire areas				Other areas			Total
	Manchuria	Kwantung	Formosa	Korea	United States	Europe	Other	
1929:								
Animal fats		1/	436	1/	1/	1/	-	436
Marine animals:								
Fish oil		703	1/	1/	43,526	26,395	6,722	77,346
Whale oil		1	1/	1/	12	71	338	422
Vegetable:								
Linseed oil		696	1/	573	40	-	114	1,423
Soybean oil	1/	2	4,053	1/	470	13,892	374	18,791
Rapeseed oil		110	1/	1,615	11,711	9,644	1,139	24,219
Cottonseed oil		115	1/	1/	-	-	369	484
Other		63	1/	897	-	20	2	982
Other:								
Hardened oil		200	1/	1/	197	8,877	3,100	12,374
Refined oil		1/	1,412	1/	1/	1/	-	1,412
Boiled oil		1/	523	1/	1/	1/	-	523
Total	1/	1,890	6,424	3,085	55,956	58,899	12,158	138,412
1933:								
Animal fats	1/	1/	463	1/	1/	1/	-	463
Marine animals:								
Fish oil	11	3,769	1/	1/	554	27,131	4,932	36,397
Whale oil	6	16	1/	1/	-	1,298	146	1,466
Vegetables:								
Linseed oil	13	566	1/	530	120	1	343	1,573
Perilla seed oil	-	1	1/	1/	16,668	34	48	16,751
Soybean oil	-	-	1,910	1/	-	2,835	131	4,876
Rapeseed oil	5	244	-	1,089	9,612	3,612	1,036	15,598
Cottonseed oil	1	4	-	1/	-	-	8	13
Other	165	402	5,225	1,528	2,440	530	539	10,829
Others:								
Hardened oil	73	2,009	2/ 4,604	1/	[redacted]	27,242	1/ 21,710	56,240
Refined oil	1/	1/	2/ 474	1/	1/	1/	-	474
Boiled oil	1/	1/	479	1/	1/	1/	-	479
Total	274	7,011	13,155	3,147	29,996	62,683	28,893	145,159
1937:								
Animal fats	72	95	837	1/	-	185	203	1,392
Marine animals:								
Cod oil	40	43	1/	1/	2,855	4,968	435	8,341
Sharks liver oil	-	205	1/	1/	-	11,496	55	11,756
Sardine oil	1	4,377	1/	1/	40	73,623	4,767	82,808
Other fish oil	3	71	1/	1/	1,055	10,218	1,776	13,123
Whale oil	9	43	1/	1/	41	4,839	167	5,099
Vegetable:								
Linseed oil	33	480	1/	1,195	-	-	959	2,667
Perilla oil	-	1/	1/	1/	26,484	1,500	653	28,637
Soybean oil	-	12	1/	1/	742	8,992	672	10,418
Rapeseed oil	58	457	1/	4,582	9,521	4,652	1,665	20,935
Cottonseed oil	-	4	1/	1/	44,544	22	335	44,905
Corn oil	-	-	1/	1/	1,252	-	1/	1,252
Other	165	440	1/	5,262	5,784	510	686	12,847
Others:								
Hardened fish oil	20	303	1/	1/	1,200	32,067	2/ 34,397	67,987
Other hardened oil	1	28	2/ 2,730	1/	11	774	3,523	7,067
Boiled oil	1/	1/	736	1/	1/	1/	-	736
Oils for cooking	1/	1/	7,696	1/	1/	1/	-	7,696
Total	402	6,558	11,999	11,039	93,529	153,846	50,293	329,666
1938:								
Animal fats	56	520	472	1/	-	-	105	1,153
Marine animals:								
Cod oil	52	54	1/	1/	1,473	1,088	152	2,819
Sharks liver oil	2/	670	1/	1/	-	10,398	-	11,068
Sardine oil	37	4,469	1/	1/	-	29,740	1,310	35,554
Other fish oil	2	24	1/	1/	3,967	2,734	626	7,353
Whale oil	6	127	1/	1/	-	33	61	227
Vegetable:								
Linseed	99	521	1/	1,563	-	-	566	2,749
Perilla oil	3	3	1/	1/	8,165	464	176	8,811
Soybean oil	-	2	1/	1/	17	1,385	971	2,375
Rapeseed oil	86	635	1/	3,440	5,223	4,568	1,290	15,242
Cottonseed oil	2	44	1/	1/	11,736	-	436	12,218
Corn oil	-	-	1/	1/	1,556	-	-	1,556
Other	121	593	1/	4,399	9,544	218	2,920	17,795
Others:								
Hardened fish oil	797	1,497	1/	1/	549	20,438	20,447	43,728
Other hardened oil	203	239	2/ 2,549	1/	79	570	1,303	4,943
Boiled oil	1/	1/	664	1/	1/	1/	-	664
Oils for cooking	1/	1/	8,889	1/	1/	1/	-	8,889
Total	1,464	9,396	12,574	9,402	42,309	71,640	30,363	177,148

1/ Not separately reported.
2/ Classified as "Hardened oil and hardened wax."
3/ Principally exported to British India and Ceylon, China, Philippine Islands, and Egypt.
4/ Estimated.
5/ Less than 500 pounds.
6/ Principally exported to China, Egypt, Mexico, and Philippine Islands.

Source: Compiled from official monthly and annual statistics of Japan, Formosa, and Korea.

 A-15

Consumption.

Asiatic peoples generally consume very small quantities of fats and oils. As indicated in the following tabulation, per capita consumption of prepared fats and oils in Japan varied during 1929-36 from 3.7 to 7.5 pounds, the trend being upward. Since the trend was upward, per capita consumption may have been a little higher in 1937-39 than in earlier years.

Fats and oils: Apparent consumption, 1929-36

Year	Total (Million pounds)	Per capita (Pounds)
1929	300	4.7
1930	240	3.7
1931	335	5.1
1932	255	3.8
1933	355	5.3
1934	414	6.0
1935	381	5.5
1936	528	7.5

The per capita consumption of fats and oils in Japan may be compared with a pre-war per capita consumption of nearly 70 pounds in the United States and about 60 pounds each in the United Kingdom and Germany. Per capita consumption in some of the other European countries is larger and in some smaller than in the United Kingdom and Germany. Per capita consumption in the Soviet Union was only about 20 pounds.

It is not known what proportion of fats and oils is consumed for civilian uses and what proportion for military uses. Undoubtedly the major share is taken by civilians and used for food, and in the production of industrial products such as soaps, cosmetics, candles, protective coatings, etc. Castor oil has been mentioned as particularly important for military purposes; glycerin has important military as well as civilian uses.

Post-war problems.

Before the war, Japan supplied about 60 percent of its consumption of fats and oils from domestic materials. Oils produced from domestic materials consisted principally of fish oils and rapeseed oil. In order to furnish a sufficient quantity and variety of fats and oils to satisfy its requirements and also to supply oil cake for fertilizer, Japan imported fats and oils and oil-bearing materials, chiefly from Manchuria and Korea, but also from China, India, and areas of southeastern Asia. In addition to satisfying home demands, Japan exported considerable quantities of fish oils and oils produced from imported oil-bearing materials.

A-15

Separation of certain areas, such as Manchuria, Korea, and some of the islands north and south of Japan proper from Japan would probably not reduce its production of fish oils materially. Korea was an important source of fish oils shipped to Japan as can be seen from the figures in table 5. The extent to which Manchuria and Korea could continue to serve as a source of oils and oil-bearing materials would depend upon future trade relations established between those areas and Japan. To the extent that production (if at all) or imports were curtailed, exports would also be reduced, assuming that the pre-war per capita consumption is to be maintained. It probably can be assumed that production of oil seeds cannot be materially increased in Japan.

If Japan's exports of fats and oils are reduced, its ability to import generally will be reduced, although a reduction of fats and oils exports would substantially lower the necessary imports of oil-bearing materials. This will need consideration in relation to over-all trade problems. A reduction in imports of oil seeds would, however, reduce production of oil cake in Japan. This will require study in connection with Japan's fertilizer requirements, as oil cake was an important source of fertilizer materials so essential to Japan's high level of agricultural productivity.